Self-medication
Sudan Journal for Rational Use of Medicine (SJRUM) is a quarterly publication produced by the National Medicine Information Center and Reference Library (NMICRL); Directorate General of Pharmacy; Federal Ministry of Health; Sudan. SJRUM is funded by Global Fund and technically supported by the World Health Organization. The first issue was published in September 2012. SJRUM aims to promote Rational Use of Medicines (RUM) through disseminating principles, views, news, and educating health providers about rational use of medicines. SJRUM targets health professionals; prescribers, pharmacists, and nurses. Each issue is centered on a theme; which usually is an important subject in RUM. SJRUM highlights in each issue the current situation in Sudan relevant to the theme, presented either by evidence from local research or with reliable anecdotal evidence. SJRUM includes research studies which aim to encourage young researchers to publish their work at national and international levels. SJRUM also includes a section for educational materials relevant to RUM relying mostly on the WHO educational materials and other reliable sources. The section of news reflects some important published news that may affect RUM practice. SJRUM includes some selected case studies, reflecting current practice at different health facilities in Sudan, so as to highlight the irrational aspects in order to overcome them. As part of NMICRL activities, medical students and the public are endowed with leaflets and fliers on selected topics of SJRUM.

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For participation please contact: sjrum@khmic.org
For more information …You can access SJRUM online on www.sjrum.sd

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Editorial

Dear fellows and readers

Welcome to the 6th issue of SJRUM.

It is a great privilege to take the editor seat in this occasion hence I believe that a journal editor has a gate-keeper function, which I consider to be an essential component of the scientific process. Editors are considered as guardians and stewards of the research record, editors should encourage authors to strive for, and adhere themselves to, the highest standards of publication ethics. The Advisory Board and the Editorial Team have already agreed that the journal is going to follow the best editorial practices in terms of reviewing and publishing articles to safeguard the scientific integrity of SJRUM. However, the biggest challenge facing us at the moment is finding sufficient number of reviewers for manuscripts and the second largest challenge concerns the breadth and depth of topics covered by the journal. I believe that while the Advisory Board is responsible for setting the policy, aims, and scope of the forthcoming issues of the journal, editors are responsible for the journal’s contents.

It is evident that irrational use of medicines may lead to increased morbidity, mortality, and prevalence of resistance to chemotherapeutics besides wasting efforts and resources. The main mission of SJRUM is to educate and disseminate information to the public and medical professionals. We anticipate that selecting the most pertinent topics would improve prescribing, dispensing, counselling, adherence and compliance at all different healthcare levels.

We are very keen to make every now and then few special thematic issues that include certain important topics such as self-medication, poly-pharmacy and patient adherence to treatment inter alia. These special issues will be preceded by a series of workshops addressing those topics to spark much needed discussion among the entire stakeholders and to have wider feedback on all important aspects concerning rational use of medicines in Sudan.

Our present policy is moving towards open access by making all issues of the journal available on-line to benefit wider readers wherever internet access is available. We also believe that the standing of a journal is important when assessing an individual’s publication record. We would like to encourage our young colleagues to publish their findings about irrational medicine use. Meanwhile, we are going to scrutinize each and every submitted manuscript by subjecting them to proper editorial process following “Guide for Authors”. This is definitely will result in higher desk-reject rates and faster editorial decisions along with an improvement in the quality of papers we send out for review.

Concurrently, we are committed to coach young authors to publish without compromising the editorial guidelines. The Advisory Board of this journal feel responsible to provide young authors with certain training to ensure that those new to the academic community clearly understand the research methodology and ethical considerations necessary when compiling and submitting a manuscript. Cross-checking is now indispensable and we intend to streamline the process for checking papers to combat plagiarism and simultaneous submission. We are not patronizing but would like to convey the wisdom of those who have been in their shoes.

We would love to hear from you if there is a topic you are keen to write about. We would also welcome ideas and any feedback you might have to share and we are looking forward to a continued improvement.

Rational use of medicine, however, depends on knowledge, attitudes and practices of health care practitioners and consumers.

Professor Sami A. Khalid
**Where are we from.**

**Self-medication in Sudan.**

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</tbody>
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Some examples of irresponsible self-medication:

- Cough syrups 90% among students as sleep aid. 3
- Skin bleaching steroids 73.5% in women. 2
- Sildenafil citrate 90% in men above 40 years. 5
- Antibiotic and anti-malarial 73% in Khartoum state. 4

**References**


The use of medications without prior medical consultation regarding indication, dosage, and duration of treatment is referred to as self-medication. In most illness episodes, self-medication is the first option which makes it a common practice worldwide.

Responsible self-medication which requires a certain level of knowledge and health orientation has some advantages. Self-medication is thought to reduce the load on the medical services, decrease the time spent in waiting to see the physician, and saves cost especially in economically deprived countries with limited health resources. However, responsible self-medication is not free of risk which can increase the burden and out-of-pocket expenses since it may result in adverse health effects that require medical intervention. Many articles reported that common Over The Counter (OTC) and Prescription Only Medications (POM) have been associated with adverse health reactions or fatalities. In addition self-medication can slip towards medication with POM and Controlled Drug Prescription Only Medicines (CD-POM). This inappropriate use may result in irrational medicine use, delayed seeking medical advice, increased side effects and drug interactions.

Several studies investigating self-medications have revealed the use of sub therapeutic doses and frequent use of antibiotics and other POM. Self-medication is influenced by many factors such as education, gender, socioeconomic status and availability of medicines.

A study was conducted in Khartoum state, Sudan to estimate the prevalence of self-medication with antibiotics/antimalarials concluded that the self-medication is alarmingly high wherein 73% of the population reporting to have used such medicines. Given the growing global resistance for antibiotic and the documented health related issues to inappropriate use of such medicines, this has major impact on public health and implications of health policies for countries like Sudan.

Recommendation to overcome irresponsible self-medication:

- Regulatory authorities are required to continuously review and classify medicinal products on the basis of safety, efficacy, and contribute to enforcement and implementation of laws and regulations.
- Adaptation of self-medication protocols by Ministry of Health and provision of reference materials and training activities for healthcare workers to meet local needs.
- Continuing education for pharmacists should be undertaken and supported to ensure maintenance of pharmacist’s capacity to respond to the changing health needs of the public.
- National pharmaceutical associations should develop certain performance standard, based on the concept of pharmaceutical care.
- Pharmacies survive commercially through product sales, but these should never be their principal focus. Product selection must be appropriate to the need and circumstances of the patient, and based on informed judgment and whenever necessary and appropriate, the patient must be referred to physician.
- Expansion of health insurance services to universal coverage can reduce the prevalence of self-medication practices.

References

What to Treat: Symptoms or Conditions?

Scenario

M. K., a 36 years old, truck driver working in the oil fields suffered from a cough productive of whitish sputum, for the past 10 weeks. He visited many pharmacies and used 18 different products during the past weeks, including cough products, common cold products, antihistamines, decongestant, nasal sprays, antibiotics and analgesics according to advice from relatives, friends, pharmacists and some doctors; but without relief. He also used various home remedies and herbs suggested by family and friends but without benefit. M. K. finds it difficult to work and takes time off during the job. The cough now is worse awakening him at night with chest discomfort. He had taken a medical leave and decided to see a doctor who referred him to a chest physician. The chest physician took an appropriate history, examined the patient, requested a chest X-ray which showed hyperinflation, the Peek Expiratory Flow Rate was 65% of the expected and the CBC (Complete Blood Count) was normal. A diagnosis of bronchial asthma was made and; severity was assessed. The patient was started on step 2 of asthma treatment; regular corticosteroid plus when required salbutamol Metered Dose Inhalers (MDI) were prescribed.

Problems

- In appropriate self medication.
- Delayed diagnosis for a serious health condition.
- Economic burden on the patient and the health care system.
- The patient was subjected to needless medicines that might harm his health.
- Home remedies and herbs are not free from adverse effects, they might have worsened the patient’s condition.
- The patient’s health suffered longer than necessary, and missed many work days.

Solutions

- Campaign of health education to the public highlighting the adverse effects of self-medication.
- Advice healthcare workers on recommending medication after appropriate a diagnoses has been made.
- Advice healthcare workers to refer patients to the appropriate specialty in order to prevent prolonging patient’s suffering, subjecting them to needless complications and to over burden them with an extra out of pocket expenditure.
- Identify triggering factors and the role of occupation on bronchial asthma so as to avoid them.
A Sad Outcome of Self-medication

A 9 months old baby boy developed watery diarrhea, six motions per day. The mother gave her baby metronidazole suspension which she already had at home. After using the drug for two days the diarrhea didn't stop, she went to the pharmacy and was given co-trimoxazole suspension. Nevertheless the diarrhea did not settle. Two days later, the child developed oral thrush, refused feeding and his general condition deteriorated. The mother stopped the medication and took him to a traditional healer, who cut the baby's uvula. The baby's condition got worse and was taken to the hospital. He was diagnosed as sepsis with malnutrition and was admitted for 15 days.

The specialist instituted the appropriate management and counseled the mother and advised her on how to deal with such conditions if experienced in the future.

Problems

Inappropriate management of diarrhea:
• The mother didn’t seek medical advice from the start.
• Inadvertent use of medicines stored at home; leftover antibiotics.
• Resorting to the traditional healer.
• Irrational dispensing of antibiotics by the pharmacist.

• Failure of the pharmacist in counseling and providing proper advice. Consequently this led the mother to seek help from traditional healers.
• The pharmacist did not provide the mother with ORS and Zinc Sulphate according to the national guidelines and Integrated Management of Childhood Illness—Federal Ministry of Health.
• Inappropriate self-medication with metronidazole and irrational dispensing of co-trimoxazole delayed the diagnosis and led to grave consequences.
• The cost of over-the-counter drugs and consequences of self-medication can be more expensive than seeking proper medical care. It can also delay the proper treatment.

Solutions

• Diarrhea is a common childhood illness. The mainstay of management is oral rehydration solution and zinc supplement. However the use of antibiotics and metronidazole to treat diarrhea in children is very common.
• Pharmacists and other health care professionals should be trained and motivated to follow standard treatment guidelines when dealing with health problems.
• Regulations to limit public access to antibiotics should be enforced.
• The public awareness about self-medication and antibiotic use should be raised especially in regard to children.
• Educational programmers using different forms of media should educate the public about the adverse impact of resorting to traditional healers.
A Skin Condition

Selma, a 19 year old female, went to a local pharmacy and asked for betamethasone cream. It was recommended by a friend who used it for a skin condition with great results. The pharmacist inquired why she needed the medicine, Selma responded for acne. The pharmacist tried to explain that this product does not help acne and suggested another product. Selma was reluctant to accept the product the pharmacist recommended and left the pharmacy. She returned some days later with very bad acne and asked the pharmacist for help. She admitted that she obtained betamethasone from another pharmacy and used the product morning and night for a few days.

Problems:
- The source of information for self-medication was not qualified.
- The client’s choice of medication was not appropriate, and clearly has negative consequences on her condition (acne) and health.
- The pharmacist failed to convince the client and provide enough information for her to understand, and accept his/her suggestion.
- The pharmacist did not suggest referral to medical help.
- The client obtained a medicine from a pharmacy without a prescription, or a justified indication.

Solutions:
- Communication skills are very important for health professionals specially pharmacists when dealing with self-medication. Health professionals should be trained to deal with such situations during their university education and in service.
- Enough information should be provided about the condition, its treatment, prognosis, effect of medicine/treatment, general advice, serious symptoms and referral. This would help the seeker of medicine understand his/her condition and choose a drug rationally, and/or accept the advice of the health professional.
- Patient education programmes are highly needed and should address these problems using different types of media. Television and radio programmes would be very effective, in addition to educational materials like leaflets, brochures, posters, which could be made available at the pharmacy.
- Misuse of steroids is a common problem in Sudan. Many youngsters (girls and boys) use them on their faces and other skin areas for acne, fairness, and beauty in general. Health professionals have a key role in combating this practice by acting professionally, e.g. do not dispense without a prescription, advice about use, effects and side effects, inform and educate patients, provide safe, affordable alternatives, …etc.
- The media should be actively utilized by health education professionals to correct the public misuse of topical steroids and mal-practice of self-medication in general.
Fatal Outcomes of Street Sold Medications: "Annajma" Example

Scenario

A 24 old lady was brought in a bad condition to the Emergency Room in Khartoum teaching hospital. Upon arrival, she was hypoglycemic, severely hypotensive with impaired consciousness. Two days prior to admission the patient, according to her family, has started to complain from myalgia, malaise, anorexia, diarrhea, abdominal pain and vomiting.

The history taken from a family member has shown that the patient, advised by a friend of hers, was using tablets known as "annajma" bought from a local market, for the last 6 months to gain weight, as she thought she was too skinny. The patient has stopped her medicine 3 days earlier, because she thought they were useless. The tablets were identified as dexamethasone 2 mg tablets.

Laboratory investigations have revealed sodium blood level of 124 mEq/ml (normal 135 - 145 mEq/ml), blood sugar was 50 mg/dl (normal 150 mg/dl). Blood pressure measurement was 50/40 mm Hg (normal 120/80 mm Hg). The treatment for adrenal crisis was instituted. The patient was immediately cannulated for IV access, and given treatment in form of dextrose, normal saline, and hydrocortisone planned to continue the treatment for the following 48 hours. Unfortunately, the patient's condition deteriorated, and passed.

Problems

This case illustrates the risks associated with self-medication with systemic corticosteroids, which has become a common practice by many Sudanese ladies recently to gain weight and whiten skin. Corticosteroids are known to cause water and salt retention leading to weight gain.

Glucocorticoids have high adverse effect profiles, and should be used only under close medical supervision when clearly indicated. Chronic use of glucocorticoids is the most common cause of adrenal crisis which represents a true endocrine emergency, a life threatening condition if untreated.

Systemic corticosteroids used for more than 3 weeks require dose tapering to allow for the hypothalamic pituitary adrenal axis recovery.

Solutions

The importance of raising awareness of the public about the risks involved with corticosteroids self-medications and the problems of obtaining medication items from sources other than pharmacies.

More effort is required from the concerned authorities to prohibit medicines to be obtained from channels other than the official channels.
Pharmacy education in Sudan started in 1964 with the establishment of the Faculty of Pharmacy – University of Khartoum. Since that time, and up to 2003, the number of registered pharmacists with the Sudan Medical Council (SMC) did not exceed 3000. From 2004 until 2012, this number has multiplied to almost 12000 registered pharmacists. This was due to the reforms in higher education which led to the expansion of pharmacy education to more than 16 faculties all offering a 5 year Bachelor degree. Seven of these faculties are public sector while the rest are operated by the private sector, and some are yet to graduate students.

The Directorate General of Pharmacy statistics of 2012 pointed that the total enrolment capacity of these faculties was actually greater than 1800 students. This expansion in the number enrolled wasn't planned for and can adversely affect the quality of the education process in Sudan. The best way to achieve quality education is to adopt the need-based pharmacy education process (Figure 1). It was found that all faculties, except two, were below the UNESCO indicator of the availability of the teaching cadre/students. This high level of enrolment number was not accompanied with increases in the number of teaching staff as there has been no clear policy for the recruitment of academic staff. The same statistics estimated the numbers of academic staff within these faculties to be only 628, of which 389 are pharmacists.

Only six of the pharmacy faculties (3 public and 3 private) offer postgraduate Masters degree which have only been recently introduced. Also, only two of these faculties offer a Doctor of Philosophy degree. There are also five special schools that offer Pharmacy Assistant certificates; none of them have graduated any students since 2007.

This data has been updated from a report on Pharmaceutical Human Resources in Sudan 2009. For the full report please refer to: http://www.hrhresourcecenter.org/node/5018

Figure 1: Need-based pharmacy education process

Kamal Eldin E. Ibrahim¹, Hiba Y. Abuturkey²

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². Head of Planning and Policies Directorate, Directorate General of Pharmacy, Federal Ministry of Health, Sudan.
Responding to symptoms, patient counseling, education and advice giving on correct uses of patients’ medicines are all innovative roles of pharmacists\(^1\). Pharmacy practice in Sudan is currently moving from the traditional product-oriented to the patient-centered care, abreast with the new paradigm shift in the practice of pharmacy. This needs a parallel modification in our pharmacy educational curricula, the regulations of pharmacy practice as well as the workload of pharmacists. Accordingly, responding to symptoms could be implemented by development of new guidelines for pharmacists when supplying medications to patients who present to the pharmacies complaining from symptoms.

The role of pharmacists in responding to symptoms and dispensing drugs without prescriptions fits well with the extended role of pharmacists in providing pharmaceutical care. It is substantial and requires a mix of good knowledge and skills; like how to differentiate between minor and serious symptoms, listening skills, questioning skills and good knowledge about evidence-based treatments for different ailments.

These guidelines describe the justification and the process of responding to symptoms by the pharmacists:-

- Pharmacists are frequently used as an alternative and less expensive source of medical care, and the first place to call for advice about minor conditions and medications.
- When pharmacists receive requests from the public for advice on a variety of symptoms thought to be related to mild self-limiting minor ailment, they may supply a medicine\(^2\), if truly indicated, with advice to consult a medical practitioner if the symptoms persist.
- Pharmacists should hold fully the responsibility and accountability for dispensing drugs without prescriptions in pharmacy.
- In responding to symptoms, pharmacists are required to follow a systematic approach according to a logical sequence\(^3\).
- This can be accomplished by first identifying the patient, establishing the profile of symptoms, establishing drug history, herbals or other traditional remedies, establishing possible existence of risk factors and finally differentiate between minor and serious symptoms, which is the most challenging step, before making a decision.
- Symptoms like nausea, vomiting, indigestion and burning urination MAY or MAY NOT be due to mild diseases. When drug treatment is appropriately recommended, the patient is advised to come again for evaluation of treatment outcome if symptoms persist \(^4\).
- The following guide takes cough as an example of a symptom that patients frequently come to the pharmacy complaining from.

Cough is a symptom that could be due to the common cold or a serious underlying cause. For an appropriate response, the pharmacist is required to use a systematic approach to assess the cough. See the checklist in the following box:-

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**Guidelines on Responding to Simple Patients’ Symptoms by Pharmacists**

By Randa Alsadig Al Mahdi

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1. Sudan Journal of Rational Use of Medicine
1. Identify patient's age (less than 2 and over 70 years are excluded), drug history, diseases history, personal habits e.g. smoking …… etc.

2. Ask the patient the following questions to differentiate wither cough is due to common cold or other diseases:
   - Did it last for more than one week?
   - Did it not respond to previous treatments?
   - Does the cough worsen in the morning?
   - Is the cough productive?
     - If there is sputum production, what color is it yellow, green or brown?
     - Is the sputum thick (mucoid to yellow)?
     - Is it thin and frothy?
     - Is it of an offensive foul smell?
     - Is it blood stained?

If any of the above symptoms are present, the pharmacist must not recommend using any of the anti-cough products and refer the patient for further assessment.

1. There are certain triggers to refer patients immediately to the doctor:
   - When there is chest pain
   - Pain on inspiration
   - Persistent nocturnal cough in children
   - Wheeze and/or shortness of breath

4. If patient comes back with no improvement after a few days s/he should be referred to a doctor

If all of the above is excluded, the pharmacist may dispense cough treatment in case the patient complains of rhinitis, congestion, with or without fever.

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**References**


Assessment of the Misuse of Topical Corticosteroids in Community Pharmacies in Khartoum Locality

Safwa M. Awad El-Karim¹, Abdalla O. ELKhawad²

Introduction
Topical corticosteroids (TC) are the most used therapeutic agents in dermatology. They provide rapid symptoms relief in almost all inflammatory dermatosis. Their pharmacological actions include antipruritic, atrophogenic, melanogenic, immunosuppressive effects beside their anti-inflammatory action.

Topical corticosteroids have many side effects e.g. steroid rosacea-acne form eruptions, erythema, papules and pustules, hypertrichosis, demodicidosis. They also include thinning of the skin (atrophy) which may result in permanent stretch marks (striae), swelling of fine blood vesicles (telangiectasia). The face, neck and back of the hands are particularly susceptible. Change in skin colour is noticeable in dark people. The skin bruises easily, and becomes susceptible to infection.¹

Topical steroids are used by females (majority) and males (minority) for whitening, general purpose beauty, and after shave. Abuse of topical steroids is an international problem with social bearing. People start using topical steroids from 15 years or less up to age 50 years.² Usually people start steroids as whitening agent on recommendation of a friend or relative.³

Initially topical corticosteroids produce magic response which prompting further use, with continuous use many side effects develop.⁴ The problem of topical steroid abuse is an international, the easy access to such pharmaceuticals contributed to the problem. Pharmacists are responsible for dispensing steroids (without prescription or indication), responding to requests of steroids and management of complaints of acne and hyperpigmentation presented to the pharmacy.

Objectives
This study aims to investigate the role of pharmacists in dispensing topical corticosteroids on request without prescription, and exploring their responses to complaints of mild acne and hyperpigmented spots.

Methods
This is a descriptive cross sectional study conducted in Khartoum Locality between Sep. Dec. 2011. 200 pharmacies were selected randomly for two predetermined scenarios. The first scenario was a female client attending a community pharmacy requesting topical steroid with no prescription and without providing justification for its use. The second scenario was a female client asking the pharmacist for a treatment for mild acne and hyperpigmented spots. Data was collected by a checklist to record the responses of pharmacists to the two predetermined scenarios. Data was analyzed by computer software SPSS 17.

Results
Considering the responses of pharmacists to dispense topical steroids (first scenario); 78% dispensed the steroid without prescription, 20% dispensed the steroid and advised the client to see a doctor, only 2% refused to dispense steroids without a prescription (Figure 1). However, none of the pharmacists (0%) gave advice on how to use the topical steroid, the amount to be administered, when, how frequently or for how long to use. None gave information on effects or possible adverse effects. 95% spent less than five minutes communicating with the pharmacist.
In the second scenario pharmacists were asked for treatment for mild acne and hyperpigmentation. 27% of the pharmacists suggested antibiotic (topical or oral) while 23% recommended topical corticosteroids. Other pharmaceutical or cosmetic products including medicated soap, facial wash, hydroquinone, and hydrogen peroxide were suggested by 37% of the pharmacists.

13% referred the client to see a doctor for medical advice (Figure 2). All interactions with pharmacists (100%) lasted less than five minutes.

**Conclusion and Recommendations**

The percentage of the pharmacists who dispensed topical steroids in community pharmacies was found to be 78%, this percentage is considered high, which indicates that there is irrational dispensing of topical corticosteroids in Sudan. There is also a tendency to dispense antibiotics in response to complaints of mild acne, another common irrational use of medicines.

All healthcare providers (especially pharmacists) should be aware about topical corticosteroid misuse, especially on the face, and motivated to act professional. The awareness of the public regarding topical steroids and their permanent side effects should be increased.

**References**

Self-medication with Antibiotics among Patients Attending Community Pharmacies in Khartoum City

Samah H. Nour Eldin¹, Abdalla O. ELKhawad²

Introduction

Self-medication is defined as the use of drugs to treat self-diagnosed disorders or symptoms, or the intermittent or continued use of a prescribed drug for chronic or recurrent disease or symptoms. Medicines are usually selected by consumers for symptoms that they regard as troublesome to require drug therapy but not to justify the consultation of a prescriber. It is also defined as the acquisition of medicines and self-administering them (or administering them to the children) with the aim of treating a perceived illness.

The practice of self-medication is a worldwide problem; however, it is more in developing countries. A major shortfall of self-medication is the lack of clinical evaluation of the health condition by a trained medical professional, which could result in missed diagnosis and delays in appropriate treatments.

Antibiotics are the most used medicines in self-medication, despite that they are prescription only medicines. For the purpose of self-medication, antibiotics are obtained as leftover pharmaceuticals from an incomplete course of treatment, supplied by friends or relatives, or purchased from pharmacies, drug stores or other.

Self-medication with antibiotics leads to adverse drug reactions, drug interactions, masking the correct diagnosis, and the development of added infection. Moreover, inappropriate antibiotic usage contributes to the development of antimicrobial resistance. This results in loss of activity of antibiotics especially those of relatively low cost, which greatly affects low income populations.

This study aims to estimate self-medication with antibiotics among patients attending community pharmacies in Khartoum city.

Methods

This is a community based descriptive cross-sectional study conducted in southern part of Khartoum Locality in 2010. 456 pharmacy attendants were selected randomly, from 97 randomly selected community pharmacies. Data was collected by a pretested questionnaire sheet. Data was analyzed, listed in tables by computer software SPSS version 17.

Results

Three hundred and sixty four (79.8%) of the study population reported they had used self-prescribed antibiotics during the last two months prior to study. This figure reflects that antibiotics are commonly utilized in self-medication. Amoxicillin was the most used antibiotic in self-medication, it was taken by 152 (33%) of the respondents alone, or in addition to Metronidazole (14.3%) (Table 1).

Table 1: Types of self-prescribed antibiotics

<table>
<thead>
<tr>
<th>Type of antibiotic</th>
<th>Percent (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amoxicillin</td>
<td>33.3</td>
</tr>
<tr>
<td>Amoxicillin + Metronidazole</td>
<td>14.3</td>
</tr>
<tr>
<td>Amoxicillin + Metronidazole + Erythromycin</td>
<td>10.5</td>
</tr>
<tr>
<td>Amoxicillin + Azythromycin + Metronidazole</td>
<td>4.6</td>
</tr>
<tr>
<td>Amoxicillin + Tetracycline</td>
<td>3.9</td>
</tr>
<tr>
<td>Ciprofloxacin</td>
<td>3.5</td>
</tr>
<tr>
<td>Other antibiotics</td>
<td>3.3</td>
</tr>
<tr>
<td>Amoxicillin + Azythromycin</td>
<td>2.9</td>
</tr>
<tr>
<td>Metronidazole</td>
<td>2.4</td>
</tr>
<tr>
<td>Erythromycin</td>
<td>1.3</td>
</tr>
<tr>
<td>Total</td>
<td>79.8%</td>
</tr>
</tbody>
</table>

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Antibiotics for self self-medication were obtained from the pharmacy by 238 (52.2%) of the respondents. (69.3%) obtained them from family members, colleague and neighbors represented (10.7%). 118 (25.9%) sought self-medication because they regarded their symptoms as simple, not necessitate seeing a doctor. While 15.6% of the respondents justified self-medication by financial strains, 16.4 % reused medication from previous prescriptions, 10.7% resorted to self-medication because it saved time, and 9.2 % regarded the pharmacist a reliable source of medical care. However, 2% of the respondents resorted to self-medication due to unavailability of nearby medical care center. About 20% of the respondents self-medicated with medicines other than antibiotics (Figure 1).

**Conclusion and Recommendations**

Self-prescribed antibiotics in the southern area of Khartoum locality were found to be alarmingly high (79.8 %).

Legislations to control antibiotics and restrict public access should be instituted and enforced. Educational programs and campaigns for public on self-medication should be implemented to raise the public awareness about the proper use of antibiotics and other medications.

**References**


![Figure 1 Stated reasons by the study population to sought self-medication](image-url)
News

Primary prophylaxis of cardiovascular disease using Aspirin- the controversy
Patrono, C. European Heart Journal, 2013

A recent review sheds a critical light onto the routine use of low dose aspirin in primary prevention of cardiovascular disease. Low dose aspirin inhibits the formation of the enzyme Thromboxane A2 which is an important amplification mechanism in platelet activation. Theoretically this prevents the development of cardiovascular disease by inhibiting propagation of thrombus. However, in primary prevention of cardiovascular disease, the incidence of vascular event is 1-2 per 1000 patients per year whereas the risk of gastrointestinal and cerebral haemorrhage for patients receiving aspirin is also 1-2 per 1000 patients per year. Whereas in patients with established ischemic heart disease the incidence of vascular events, rises to 10-18 events per 1000 patients per year. Hence it seems that the use of aspirin in patients with no prior cardiovascular disease doesn’t confer more benefit when compared with the associated risk. However, international guidelines continue to recommend the use of aspirin primary prevention of cardiovascular disease in hypertensive patients who have other associated risk factors such as ethnic origin, family history, smoking and dyslipidemia. This recent review highlights the need to revise these guidelines.

Dosing of warfarin based on pharamcogenetics not superior to conventional dosing
Verhoef et al, New England Journal of Medicine, 2013

The metabolism of warfarin is dependent on a genetic basis; genetic polymorphisms in the cytochrome P-450 enzyme CYP2C9 include two variants, C144R in CYP2C9*2 and I359L in CYP2C9*3. These variants have substantially reduced activity, as compared with CYP2C9*1, and are associated with reduced clearance and thus a decrease in warfarin-dose requirement. Similarly, mutations in VKOR, the target of the vitamin K antagonists, lead to various degrees of warfarin resistance. Hence genotyping of CYP2C9 and VKOR leads to more precise dosing of warfarin.

A randomised clinical trial that included 1015 patients enrolled into two arms; normal INR dosing using standardised algorithms and dosing directed by genetic polymorphisms. The study revealed that INR control in the first 4 weeks showed no improvement in the genetic arms versus the standard dosing arm (% time INR in therapeutic range from day 4/5 to day 28 =45.2% genotype dosing vs. 45.4% clinical dosing; p= 0.91).

The authors concluded that pharmacogenetic dosing of warfarin was non superior to dosing using standard clinical algorithms currently in use.

Bias in Breast Cancer clinical Trials reporting
Vera-Badillo, F.E. et al Annals of Oncology, 2013

The authors of this report conducted an analysis of 164 randomised controlled trials in breast cancer to assess bias in the reporting of efficacy and toxicity end points. Bias was assessed from the reporting of the abstracts because it was realised that busy clinicians often do not have the time to read the full article. Half of the trials were for adjuvant treatment whereas the other half were for management of metastatic disease. The end points used in most trials (83.5%) were disease free survival or progression free survival. A minority of trials (16.5%) used overall survival as the primary end point.

Nearly a third (33%) reported a positive secondary outcome when the primary end point was negative, to imply positive results to the experimental arm. Only 32% of trials with positive primary end points reported moderate and severe side effects, choosing to ignore reporting toxicity.

Hazel Thornton a visiting fellow at the University of Leicester commented that researchers should be transparent, honest, unbiased and objective in their reporting of clinical trials. These studies are used by clinicians and patients to decide on breast cancer treatment where there are many uncertainties.
Eye drops are a sterile solution or suspension of medicine. They are used to produce a local effect directly on the eye and therefore they must be instilled correctly. To limit wastage and systemic absorption a single drop should usually be prescribed. If the patient needs to use two types of drops their instillation should be separated by at least five minutes. Most eye drops contain a preservative, but they should not be kept beyond the expiry date on the label. Eye drops should generally be stored in a cool dry place (always check manufacturer specifications) and once eye drops have been opened they should be disposed of after 28 days.

Professionals should explain the following steps to their patients:

1. Wash hands thoroughly prior to instilling the medication.
2. Remove cap from container and place on clean surface.
3. Using forefinger, pull lower lid down gently.
4. Instruct patient to look upward.
5. Instill a drop of the medication into center of lower lid.
6. Instruct patient to close eyes slowly but not to squeeze or rub them or open the eye.
7. Keep the eyelids closed, and apply gentle pressure on the inner canthus (punctual occlusion) near the bridge of the nose for 1 or 2 minutes immediately after instilling the eye drops.
8. Wipe off excess solution with gauze or cotton balls.
9. Wait 5 to 10 minutes before instilling another eye medication on the same eye.
10. Wash hands again after instilling medication.

http://www.australianprescriber.com/magazine/31/1/16/7
Success stories

Khartoum Medicines Information Centre (KhMIC): A Success Story, and a New Age

Hussam Aldein H. Othman

In a bright sunny day of April, the year 2000, a workshop by the name of Developing the Profession of Pharmacy was launched at the General Directorate of Pharmacy, Khartoum State. The workshop was the starting point for many successful projects which served the profession in the years to come. One of these projects was the establishment of the first medicines information centre on the state level, under the General Directorate of Pharmacy-Khartoum State. Khartoum medicines Information Centre first started only as a small unit to answer enquiries regarding medicines from the public and health professionals. The centre started with three operating pharmacists, three computer terminals and a handful of textbooks. The centre initially shared an office with the department of Health Education, and later, the two were merged, to handle query answering, health education and promoting rational use of medicines.

Several challenges faced the Centre; namely the limited budget was a primary issue. Because of this, disconnections in the internet and telephone services were common due to delayed payments. It also made it difficult to acquire new expensive textbooks and subscription based online resources. Likewise, printing published materials was a common struggle the Centre had to undergo at each turn. A notable challenge initially faced the reception KhMIC, and the idea of a MIC, specifically from physicians, and the need for intensive promotion for the centre and its services was recognized. In order to spread the word about the centre and its role, promotional campaigns were started in which posters were hung on the walls of the Ministry of Health, academic institutes and public hospitals. In addition, a variety of pamphlets and bulletins were published to communicate with the public and health professionals alike. Last but not least, was the publication of the Khartoum Pharmacy Journal (KPJ), a scientific quarterly journal, which acquired an International Standard Serial Number (ISSN) in 2007. The scope of the journal encompasses all pharmacy related subjects. The journal helped shed light on the name of KhMIC in the scientific circles. These efforts were rewarded by an increase in enquirers among the public and health professionals, doctors especially, who were the most difficult to persuade.

Initially, there were two work shifts, one from eight to three in the afternoon, and another from

Figure 1 Enquiries to KhMIC in the period from 2007 to November 2013

1. Medicines information Pharmacist, Khartoum Medicine Information Centre, MoH, Khartoum State.
six to ten in the evening, every day of the week except holidays. In 2009, an additional shift was later introduced from three to six in the evening, and the Centre started shifts to cover the holidays. The quantity and quality of the staff, working computer terminals and other facilities have also seen an upgraded.

With these technical improvements, the enquiries to the Centre increased by about 4 folds (Figure 1). The center began with simple stationary telephones, and few lines. The number of lines was later increased, but this presented the problem of having several phone numbers that may have been difficult to memorize. The service was upgraded in 2010 to a one short number, 4141 from all networks, which was easier to remember.

The budget dedicated to publications was also increased, thanks to the diligence of KhMIC members. Bulletins and pamphlets are now issued at a minimum rate of 5-6 times a year, containing promotional articles, drug updates, and educational materials. In addition, a number of electronic medicines libraries, and electronic soft references were purchased, revolutionizing the services provided by the centre.

The centre started in a health scene with only a few similar experiences, not only on state level, but on the national level as well, facing the challenge of being the pioneer medicines information centre. With this lack of guidance, the centre resorted to Sudanese pharmacists practicing abroad to reflect the experience of international medicines information centres, and to receive proper training from highly competent MICs. The members of Centre visited many MIC centers in many countries, the most noted were; South Africa, Sweden, Indonesia, the U.A.E, and the U.K.

The role of KhMIC as a leading training and educational body was asserted in its annual medicines information training courses, which train public hospital pharmacists in medicines information service and evidence based medicines. KhMIC also provide educational and technical support in establishing new medicines information centres all over the country.

Kh-MIC’s mission for 2014 is to be one of the top institutes providing evidence based, current, reliable medicines information, and promoting the concept of rational use of medicines, which ultimately helps make our vision of a better health for all a reality.
The Role of Doctors’ Counseling in Promoting the Rational Use of Medicine

Irrational use of medicines is a major problem worldwide. The World Health Organization estimates that more than half of all medicines are prescribed, dispensed or sold inappropriately; and that half of all patients take them incorrectly, irregularly, or not at all.\

Low compliance to prescribed medical interventions is a major problem in health care; it is complex and ever present. Good doctor-patient relationships and taking the time to give the necessary information and instructions to patients have been proved to be one of the effective means of improving patient medicine use.

A good doctor-patient relationship is established through respect for the patient’s feelings and viewpoint and empowering him as a partner in therapy. Studies of the relationship between communication and outcome have shown that the quality of clinical communication is significantly related to positive health outcomes.\

Unfortunately, the importance of patient counseling is rarely acknowledged. It has been argued that the set-up of our public sector hospitals does not allow the physicians to serve up to standards. The heavily crowded outpatient clinics and wards with continuous inflow of patients have been held responsible for not leaving an opportunity for the doctor to explain and educate the patients of their illnesses. Having too many patients is never accepted as a valid excuse for not informing and instructing a patient correctly. Hence, patient counseling remains an obligation and a professional responsibility, regardless.

Patient counseling is the process of information transmission from an authoritative health care professional to a passive subject. Effective communication is a key component of patient counseling.

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<thead>
<tr>
<th>1. Effects of the medicine</th>
<th>2. Side effects</th>
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<tr>
<td>Why the medicine is needed?</td>
<td>Which side effects may occur?</td>
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<td>Which symptoms will disappear, and which will not?</td>
<td>How to recognize them?</td>
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<td>When the effect is expected to start?</td>
<td>How long they will continue?</td>
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<td>What will happen if the medicine is taken?</td>
<td>How serious they are?</td>
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<td>What action to take?</td>
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<th>3. Instructions</th>
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<td>How the medicine should be taken?</td>
<td>When the medicine should not be taken</td>
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<td>When it should be taken?</td>
<td>What is the maximum dose?</td>
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<td>How long the treatment should continue?</td>
<td>Why the full treatment course should be taken?</td>
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<td>How the medicine should be stored?</td>
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<td>What to do with left-over medicines?</td>
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<th>5. Future consultations</th>
<th>6. Everything clear?</th>
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<tr>
<td>When to come back (or not)</td>
<td>Ask the patient:</td>
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<tr>
<td>In what circumstances to come earlier</td>
<td>whether everything is understood?</td>
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<tr>
<td>What information the doctor will need at the next appointment</td>
<td>to repeat the most important information?</td>
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<tr>
<td></td>
<td>whether the patient has any more questions?</td>
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Figure 1: Minimum information that should be given to the patient.4
Doctors are the first members of the health care team who the patient encounters. Doctors must keep in mind that it is their responsibility to help patients achieve desired health outcomes. It is, therefore, pertinent that they build a good relationship with patients and communicate effectively.

Doctors need to give patients ample time, provide clear information in common language that could be well perceived. It is also the doctor’s responsibility to make sure that the patient, on leaving, is well aware of his/her condition and his/her prescribed medication. See figure 1

The above may seem a long list to go through with each patient. Doctors may think that there is not enough time; that the patient can read the package insert with the medicine; that the pharmacist or nurse should give this information; or that too much information on side effects could even decrease adherence to treatment. Yet it is the prime responsibility of the doctor to ensure that the treatment is understood by the patient, and this responsibility cannot be shifted to the pharmacist or a package insert.

In conclusion, communication in medical care is highly correlated with better patient adherence. Therefore, patient counseling must be regarded as one of the essential components of the overall medicine use process. The patient must be aware of the reason for use, method of use, therapeutic as well as the side effects of the medicine prescribed. Patient counseling does not only increase compliance in medicine intake and ensures its rational use, but will also have an impact in the prognosis of the patient’s disease and their overall well being.

References:


Over the counter (OTC) medication are those medications which can be dispensed by the pharmacist without referring back to a written prescription. The National Medicines and Poisons Board (NMPB) have developed a list that contains all medication that can be dispensed without a prescription. To promote rational use of medicines the pharmacists when dispensing any medication should provide appropriate counseling to the patients. Counseling should be done with special care when dispensing OTC medicines. Here in this issue we will give outline of steps that may assist the pharmacists in counseling patients.

The Counseling process

1. Start patient counseling with an ice-breaker - using verbal communication and body language

Every pharmacist should begin the OTC counseling session by introducing himself/herself by name which identifies him/her as the pharmacist. Sensitivity in dealing with patients is one of the priorities in the OTC session. It is important to relax the patients by using a comfortable voice and smile. While counseling patients, pharmacists should remember not to be distracted by any other activity e.g. talking on the phone.

The pharmacist should first acquaint with the patient/client and particularly bear in mind their educational, professional, social and cultural background. This is often difficult when one meets a patient for the first time and perhaps only has few minutes for an OTC counseling session.

2. Effective communication

The pharmacist should be a good and skillful communicator and selects words carefully to avoid any ambiguity, bearing in mind that the two key elements of effective communication are simplicity and brevity. He/she must not confuse or underestimate the patient’s intelligence and talk at his/ her level of understanding.

3. Obtain complete patient history

In order to elicit key information the pharmacist should obtain relevant information about patient’s demographics (e.g. sex, age, pregnancy, nursing, weight, allergies, social history,… etc.), diseases (e.g. history of present illness, current symptoms, medical history and family history) and medications (prescribed, OTC or herbal). This will helping making an informed decision to dispense an OTC or refer the patient to a doctor.

4. Inform, educate, and counsel patients on medications in use - demonstrate and practically check the use of different dosage forms.

The pharmacist should inform, educate, and counsel patients with regards to: drug name (generic and/or brand); route of administration; dosage form; dose and administration schedule. In addition to the above, the pharmacist should provide the patient with information about storage of the pharmaceutical product; potential drug-drug or drug-food interactions; special directions for preparation and administration and methods for self-monitoring.

It is also of vital importance to demonstrate to patients how to use medications in various dosage forms such as metered dose inhalers, skin patches, eye/ear drops, ointments, lozenges, gargles… etc. and ask them to return the demonstration to make sure that they understood how to use these products properly. Patients must be instructed on how to schedule their medications in accordance with meals and other concurrently used medications.

A recent WHO recommendation states that all necessary instructions should be provided in writing.
5. Be selective in providing information to the patient

The pharmacists should always select the most significant side effects to inform the patients with, how to detect them and encourage them to come back to report to the pharmacy any experienced adverse drug effects.

6. The pharmacist should empathize

with the patient’s situation through good listening to his/her problems. This makes the patient feel being acknowledged and will comply with what he/she has heard from the pharmacist, no matter if this counseling session has resulted in offering an OTC or not.

Reference


7. Monitoring drug therapy

Is another key important element that extends the responsibility of the pharmacist to the patient’s medication use and follow up beyond the pharmacy counter, which maximizes the benefits of the pharmaceutical products.

8. The "signature" of the pharmacist

The personal appearance of the pharmacist, his/her eye contact, body language, correct writing abilities, smiling and legibility, comprise the distinguishing aspect of pharmacists. They help building up the patient’s trust and confidence on the profession of pharmacist.
The Role of Nurses in Promoting Rational Use of Medicine

Nurses as important members in the health care team have important roles in promoting rational use of medicines. Self-medication is very common in Sudan, and nurses as healthcare providers and community members are involved in self-medication. For example, nurses are commonly asked by the public to administer injectable medicines that are obtained without prescription like painkillers and antibiotics. In such cases nurses should ask for prescriptions otherwise they should not administer the medication.

Nurses are responsible for correcting public malpractices regarding self-medications. They play an important role in guarding the public against irrational use of medicines, and disseminating reliable pharmacological and non-pharmacological advice and information. The nurses’ roles regarding the health of the community are advocator, guardian, leader, planner, educator, researcher, and counselor.

Advocating for setting-specific, accessible medicines information about the most misused medicines in self-medication such as antibiotics, is important. Such setting requires a collaborative work between the stakeholders; health care providers and community members. The information offered should be in a simple, credible, attractive way. Availability of information will facilitate public acceptance to obtain medicines only through prescriptions.

Nurses play a major role as a safeguard for individuals’ medicines safety. Following protocols and standard guidelines of medicines administration; during and after their duties is important in dealing with non-prescribed medicines. This is a golden rule to follow when nurses are asked to administer injectable medicines such as analgesics and sedatives.

One of the innovative roles of nurses is leading families and communities to better health and well-being throughout their lives. Nurses work in collaboration with other counterparts of the health system; physicians, dentists, pharmacists, and other health team members to promote individuals’ health. This role is constructed steadily in integrated seamless health systems. If such health system does not exist there will never be a leading nurse.

Educating patients, families and communities is a significant role of nurses in management of health problems or events. Accordingly education about self-medication can be started at the healthcare setting for patients/clients, during their stay in the facility. By asking and answering questions; because many factors (cultural, educational, socioeconomic … etc.) can affect in persuading them to accept the information. The message given, if well understood, will be disseminated for larger groups until it reaches the whole community.

Nurses are planners for communities, families and patients’ care by assessing their needs, and thus setting definitive goals for implementing appropriate care. These needs are varied; some are physical, psychological/spiritual, social and cultural. Assessment of felt needs help in planning for managing usage of none prescribed medications.

Nurses often offer counseling to patients, care givers, families and the community at large. They practice counseling during and after their duties. Counseling solves detected limitations of understanding or adaptations to new health problems or events. When nurses are confronted with people self-medicating, they should be patient, confident, knowledgeable, polite and realistic to come out with successful and convincing counseling that would benefit the health of the medicine’s seeker.

For solving communities’ health problems, and correcting health behaviors research is cornerstone. The use of scientific evidence in practice makes a difference. Research areas can be selected by experts, and conducted to find solutions to change the current behaviors in self-medication among communities and individuals.
What is Pharmacovigilance?

The World Health Organization (WHO) defines pharmacovigilance as the science and activities related to the detection, assessment, understanding and prevention of adverse effects or any other possible drug-related problems.

Modern medicines have changed the way in which safety & quality monitoring of drugs becomes an integral part of clinical practice. Also patient care is changing and growing into a clinical, evidence based, scientific regulatory discipline so in providing high quality medical care, safety monitoring is essential to this ongoing process.

As this has happened so new ideas and approaches have been introduced and flourished vigorously, sometimes to be replaced or modified, sometimes to find a lasting place in our practice tool, but the focus is always to improve the safety of patient undergoing treatment. Pharmacovigilance is one of this tools and it is recognized as a clinical discipline that serves as an indicator of the standards of clinical care practiced within a country.

Although many drugs have been extensively used in Sudan, their safety and quality profile are not completely approved; especially the new drugs for the treatment of HIV/AIDS, TB and MALARIA as well as Immunizations and Vaccinations products.

An important task of ADR monitoring and pharmacovigilance planning is to collect new information from reliable scientific resources such as healthcare professionals, international health bodies, published and updated literature, etc. followed by classifying and analyzing this information and last but not the least circulating its contents as well as any action taken on specific drug to all health sectors. It is this last provision, which provides important impetus to healthcare professionals and general public.

Pharmacovigilance and post market surveillance are a broad concept, and it includes the reevaluation of marketed drugs, risk management, communicating drug information, promoting safe drug use, and crisis preparedness. So it is becoming increasingly important to provide services in all of these areas and to carry out intensive monitoring of new drugs in our country to evaluate the risk/benefit in each country where the incidence, pattern, and severity of adverse reactions may differ markedly because of local environmental and genetic influences.

The directorate of post marketing surveillance is concerned with detection, assessment and prevention of Quality defects and safety problems (adverse drug reactions “ADR”). Of medicinal products.

Sudan Pharmacovigilance Department is a member of the global intelligence network for monitoring benefits and risks in medicinal products. It concerned with detection, assessment and prevention of adverse drug reactions (ADRs). The central theme of the department is the demonstration of safety rather than the identification of risks.

The Sudan pharmacovigilance programme aims to foster the culture of Adverse Drug Reaction (ADR) reporting by raising the awareness of the health care professionals, and subsequently aims to generate broad based ADR data on the Sudanese population and share the information with global pharmacovigilance community through WHO-UMC.

For more details please visit: www.nmpb.gov.sd/pharmacovigilance
1. **What is meant by self-medication?**

Self-medication is the selection and use of medicines by individuals to treat self-recognized illnesses or symptoms.

2. **What are the main factors that lead to increasing in self-medication among the population?**

There are many factors that are associated with self-medication like: socioeconomic factors, lifestyle, ready access to medications, belief of patients that they can manage certain illnesses through self-care and greater availability of medicinal products.

3. **What are the potential risks of self-medication?**

Self-medication is potentially an unsafe practice with many risks that include: incorrect self-diagnosis, delays in seeking medical advice when needed, infrequent but severe adverse reactions, dangerous drug-drug interactions, incorrect manner of drug administration, incorrect dosage, incorrect choice of therapy, masking of a severe disease and risk of dependence and abuse.

4. **Why is self-medication not preferred?**

Medicines even those used for perceived minor illnesses, and those for some chronic or recurrent conditions, are potentially harmful and therefore should be specifically selected for the purpose. Medicines selection should be appropriate for the specific condition, requiring right dose, dosage forms and duration. This could only be decided by trained healthcare professionals such as the physician or the pharmacist.

5. **How can pharmacists play an effective role in discouraging self-medication?**

The pharmacist as the main medicine supplier can play a very effective role in discouraging self-medication. The pharmacist should not dispense any prescription medication without a prescription and the risk of self-medication should be clearly explained to the patient. The pharmacist should identify the symptoms complex of minor illnesses and respond to them accordingly, or refer the patient to the doctor if needed.
Guide for authors

Scope of the journal:
Rational use of medicines (RUM) issues directed to health care providers and medical students.

Suitability of publication:
All topics related to the different aspects of RUM will be evaluated by the editorial board. Prospective authors with a subject(s) or questions about the suitability of their papers or materials are invited to request an opinion from the Editorial Board. (sjrum@khmic.org).

Avoid plagiarism

How to submit materials:
Manuscripts can be handed over directly to the Directorate General of Pharmacy as soft copy or by e-mail (sjrum@khmic.org).

Types of manuscripts:
1. Research papers.
2. Case reports.
3. Thematic topics.
4. Success stories.

Preparation of manuscripts
All manuscripts must be typed in Arial font size 12, with 1.5 line spacing. Manuscripts must be in Word. Page margins on all sides must be at least 2.5 cm wide. You can use either English or American spelling but not both on the same manuscript.

1. Research papers
Original research will have the priority of publications. Author(s) name and affiliations should be clearly written. Contact person, telephone number and e-mail address should be included.
Total words count should not exceed 800 words including references, tables, table captions, figure legends, and footnotes. Maximum of three tables and figures are accepted. The manuscript should be divided into sections. Each section should have a separate heading. Subheadings take the form of paragraph lead-ins (should be bold case), indented and run in with the text, separated by a period.

Introduction: This section should provide the reader with sufficient background information to evaluate the results of the research. An extensive review of the literature is not needed in this section. It should also give the rationale for and objectives of the study that is being reported.

Methods: Sufficient information must be provided so that the reader will understand the methodology and be able to repeat the experiment.

Results: The results section should be written in such a manner to provide information by means of text, tables and figures. Results and discussion may be combined or there may be a separate discussion section. If a discussion section is included, place extensive interpretations of results in this section. Do not repeat the results. Give numbers to figures and tables in the order in which they are mentioned in the text. All figures and tables must be cited in the text.

Conclusions and recommendations: Acknowledge personal, financial and institutional assistance at the end of this section.

References: Use the Vancouver reference system. Cite 6 references maximum.

Ethical clearance is a requirement for all researches from 2012 onward.

2. Case reports
Any case that is related to RUM will be considered. The manuscript should include the following setting: complete description of the case, consequences and outcome and finally follow up if applicable. Suggestions for solutions should be included. Words count should not exceed 400 words.

3. Thematic topics
Any topic related to rational medicine use is considered. The manuscript should not exceed 400 words.

4. Success stories
Any story that reflects rational use of medicine and positive changes towards rational medicines use is welcomed. The manuscript should not exceed 400 words.

NOTE: Accepted manuscripts may be subjected to minor/appropriate changes prior to publishing.

Please check the website for previous issues and updates www.sjrum.sd
Central Medical Supplies Public Corporation

Central Medical Stores is the national center for procurement, storage and distribution of medical supplies in Sudan. It was established in 1935 as a department in the Sudan Medical Services. In February 1991, the Central Medical Supplies became a para-statal organization, and was subsequently renamed the Central Medical Supplies Public Corporation (widely known as CMS).

CMS vision: Strive to provide the need of every citizen by the effective and safe medication, with the optimum required quality, continuous supply, affordable and feasible cost.

For any queries about medicines availability of certain medicines, call the CMS hot telephone line ‘5959’.

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